CDPS-41SQ

HDMI 4×1 Seamless Quad Switcher

Operation Manual

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SAFETY PRECAUTIONS

Please read all instructions before attempting to unpack, install or operate this equipment and before connecting the power supply.

Please keep the following in mind as you unpack and install this equipment:

- Always follow basic safety precautions to reduce the risk of fire, electrical shock and injury to persons.
- To prevent fire or shock hazard, do not expose the unit to rain, moisture or install this product near water.
- Never spill liquid of any kind on or into this product.
- Never push an object of any kind into this product through any openings or empty slots in the unit, as you may damage parts inside the unit.
- Do not attach the power supply cabling to building surfaces.
- Use only the supplied power supply unit (PSU). Do not use the PSU if it is damaged.
- Do not allow anything to rest on the power cabling or allow any weight to be placed upon it or any person to walk on it.
- To protect the unit from overheating, do not block anyents or openings in the unit housing that provideentilation and allow for sufficient space for air to circulate around the unit.

REVISION HISTORY

VERSION NO.	DATE DD/MM/YY	SUMMARY OF CHANGE
VR0	17/10/13	Preliminary Release
VS1	23/05/13	Updated Format/Diagrams

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1. INTRODUCTION

This 4×1 HDMI Seamless Quad PIP Scaler is an advanced HDMI switch with integrated Picture-in-Picture (PIP) technology that can be easily configured and controlled. It allows 4 different sources to be selected and arranged on a single display and supports video resolutions up to 1080p and audio up to 8CH/192kHz. Preset hot keys, IR and RS-232/ Telnet support allows instant control and switching.

2. APPLICATIONS

- Broadcasting control room
- Surveillance control room
- Public advertisement displays
- HDMI Input extending
- Video wall system

3. PACKAGE CONTENTS

- 1×4 by 1 HDMI Seamless Quad PIP Scaler
- 1× Remote Control (CR-124)
- 1×12/3 A DC Power Adaptor
- Operational Manual

4. SYSTEM REQUIREMENTS

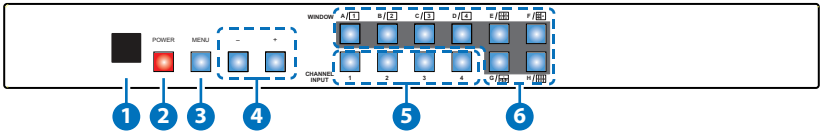
HDMI source devices such as DVD/Blu-ray players or PC/Laptop devices and output to HDTV/monitor or to an HDMI distribution system.

5. FEATURES

- Integration of 4 HDMI sources to a single display or video wall system
- Seamless switching of HDMI channels and windows
- Supports individual channel size and position adjustments
- Zoom, shrink and overlay the source channels
- Supports Fade-In/Fade-Out, Chromakey, Mirror and Rotation (90˚ left/right and 180˚ up or down) functions
- Supports Picture-in-Picture (PIP), Picture-out-of-Picture (POP) and multi-window display
- 8 Screen preset hot keys
- Supports OSD, RS-232, Telnet, Remote and on-panel controls
- Save and recall up to 4 customisable favorite screen arrangements

6. OPERATION CONTROLS AND FUNCTIONS

6.1 Front Panel



1. **IR Window:** Accepts the IR signal from the supplied remote control.
2. **POWER:** Press to turn the unit on or to put it into standby mode.
3. **MENU Button:** Press this button to bring up the On-screen Display (OSD) menu on screen.
4. **MINUS/PLUS (−/+):** Press these buttons to navigate down/up the OSD menu.
5. **CHANNEL INPUT 1~4:** Press to cycle through the four HDMI sources to be displayed in the corresponding window. All windows can display the same input or each channel can display a different input.
6. **WINDOW A~H:** Press these hot keys to select the required screen configuration. Windows A to D will display the selected channel in full screen. Windows E to H can display a combination of channels on the same screen.

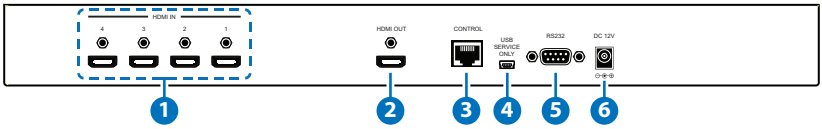
   Windows A to D's source selection corresponds to channel inputs 1 to 4. To change the input channel for Window A, press the button for channel input 1. You will not be able to select the buttons for channel inputs 2 to 4 when window A is selected. The sizes for Windows E to H are adjustable through the OSD menu settings.

   Note: Only Window G is PIP(Picture-in-Picture) whereas E, F and H are POP (Picture-out-of-Picture) modes.

   The order of priority when windows overlap each other is Channel 4>Channel 3>Channel 2>Channel 1 i.e Channel 4 will cover Channel 3, Channel 3 will cover Channel 2 and so on.

   Note: Under some circumstances the window borders may show some interference, adjusting the display's motion setting may resolve this issue.

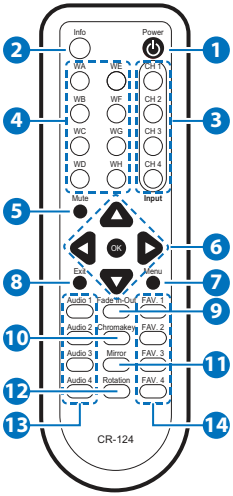
6.2 Rear Panel



1. **HDMI IN 1~4:** Connect to up to four source HDMI equipped source devices such as DVD/Blu-ray players and or PC/Laptop devices.
2. **HDMI OUT:** Connect to a HD TV/monitor or HDMI matrix for display of the image.
3. **CONTROL:** Connect to an active network for Telnet control (refer to Section 6.5 for details).

   Warning: Please do not connect this port directly to the PC/Laptop as the Telnet function will not work.
4. **USB SERVICE ONLY:** Reserved for manufacturer use only.
5. **RS-232:** Connect to a PC/Laptop or RS-232 control system to use RS-232 commands to control the device (See Section 6.5 for details on RS-232 commands).
6. **DC 12V:** Connect the 12V DC power supply to the unit and plug the adaptor into an AC outlet.

6.3 Remote Control



1. **Power:** Press this button to switch the device on or to set it to standby mode.
2. **Info:** Press this button to display the device's firmwareersion.
3. **Input CH 1/2/3/4:** Press these buttons to cycle through the HDMI sources (1 to 4) for each channel to be displayed on screen.
4. **WA~WH:** Press these hot keys to select the screen setting where WA to WD display the selected channel in full screen and WE to WH display different combinations of all 4 channels on the same screen.
5. **Mute:** Press this button to mute the audio from the HDMI output.
6. **▲▼►◄ and OK Buttons:** Press these buttons to navigate through the OSD menu and press OK to enter or confirm settings.
7. **Menu:** Press this button to enter into the OSD menu.
8. **Exit:** Press this button to exit the OSD menu or settings.
9. **Fade-In-Out*:** Press this button to switch on or off the Fade in/out function.
10. **Chromakey*:** Press this button to activate the Chroma key function where CH 1 is the background and CH 2 is the overlaid (top) image.
11. **Mirror*:** Press this button to display the screen in mirror image.
12. **Rotation*:** Press this button to rotate the image 90˚ left/right or 180˚ upside down.
13. **Audio 1/2/3/4:** Press these buttons to select the audio from HDMI input source 1 to 4.
14. **FAV. 1/2/3/4:** Press these buttons to bring up the previously stored customized screen settings.

Note: The functions with an asterisk (*) will only work when displaying Windows A to D. The system will revert to Window A if these functions are used when Windows E to H are displayed.

6.4 RS-232 Protocols

Switcher	
PIN	**Assignment**
1	NC
2	Tx
3	Rx
4	NC
5	GND
6	NC
7	NC
8	NC
9	NC

Remote Control	
PIN	**Assignment**
1	NC
2	Rx
3	Tx
4	NC
5	GND
6	NC
7	NC
8	NC
9	NC

Baud Rate: 115200bps
Data Bit: 8 bits
Parity: None
Flow Control: None
Stop Bit: 1

6.5 RS-232 and Telnet Commands

COMMAND	DESCRIPTION
POW000	Power Off
POW001	Power On
WND001	Change to Window A
WND002	Change to Window B
WND003	Change to Window C
WND004	Change to Window D
WND005	Change to Window E
WND006	Change to Window F
WND007	Change to Window G
WND008	Change to Window H
CH1001	Change CH1 to Source 1
CH1002	Change CH1 to Source 2
CH1003	Change CH1 to Source 3
CH1004	Change CH1 to Source 4
CH2001	Change CH2 to Source 1
CH2002	Change CH2 to Source 2
CH2003	Change CH2 to Source 3
CH2004	Change CH2 to Source 4
CH3001	Change CH3 to Source 1
CH3002	Change CH3 to Source 2
CH3003	Change CH3 to Source 3
CH3004	Change CH3 to Source 4

COMMAND	DESCRIPTION
CH4001	Change CH4 to Source 1
CH4002	Change CH4 to Source 2
CH4003	Change CH4 to Source 3
CH4004	Change CH4 to Source 4
MUT000	Mute Off
MUT001	Mute On
AUD001	Change Output Audio to Source 1
AUD002	Change Output Audio to Source 2
AUD003	Change Output Audio to Source 3
AUD004	Change Output Audio to Source 4
FAD000	Fade In-Out Off
FAD001	Fade In-Out On
CHR000	Chromakey Function Off
CHR001	Chromakey Function On
MIR000	Mirror Function Off
MIR001	Mirror Function On
ROT000	Rotation Function Off
ROT001	Rotation Function Right
ROT002	Rotation Function Left
ROT003	Rotation Function Upside Down
SFA001	Store Window Format to FAV 1*
SFA002	Store Window Format to FAV 2*
SFA003	Store Window Format to FAV 3*
SFA004	Store Window Format to FAV 4*

COMMAND	DESCRIPTION
RFA001	Recall Window from FAV 1
RFA002	Recall Window from FAV 2
RFA003	Recall Window from FAV 3
RFA004	Recall Window from FAV 4
IO1000	CH1 Image OFF
IO1001	CH1 Image ON
IO2000	CH2 Image OFF
IO2001	CH2 Image ON
IO3000	CH3 Image OFF
IO3001	CH3 Image ON
IO4000	CH4 Image OFF
IO4001	CH4 Image ON

Note:

1. *Commands with an asterisk (*) will not function under Windows A to D.*
2. *Commands will be not executed unless followed with by a carriage return. Commands are case-sensitive.*

6.6 OSD Menu

MAIN MENU	1ST LAYER	2ND LAYER	3RD LAYER
Image Adjust	Brightness Adjust	CH 1	0~100 (50)
		CH 2	0~100 (50)
		CH 3	0~100 (50)
		CH 4	0~100 (50)
		Value Reset	
		Menu Exit	
	Contrast Adjust	CH 1	0~100 (50)
		CH 2	0~100 (50)
		CH 3	0~100 (50)
		CH 4	0~100 (50)
		Value Reset	
		Menu Exit	
	Hue Adjust	CH 1	0~100 (50)
		CH 2	0~100 (50)
		CH 3	0~100 (50)
		CH 4	0~100 (50)
		Value Reset	
		Menu Exit	
	Saturation	CH 1	0~100 (50)
		CH 2	0~100 (50)
		CH 3	0~100 (50)
		CH 4	0~100 (50)
		Value Reset	
		Menu Exit	
	Picture Reset		
	Menu Exit		

MAIN MENU	1ST LAYER	2ND LAYER	3RD LAYER
Window Setup	Channel 1 Select	Size	CH1 Wxxx Hxxx
			Width Unit
			Width Ten
			Width Hundred
			Height Unit
			Height Ten
			Height Hundred
		Position	CH1 Hxxxxxx
			Horizontal Unit
			Horizontal Ten
			Horizontal Hundred
			Vertical Unit
			Vertical Ten
			Vertical Hundred
		Image Output	On/Off
		Window Reset	
		Menu Exit	
	Channel 2 Select	Size	CH2 Hxxxxxx
			Width Unit
			Width Ten
			Width Hundred
			Height Unit
			Height Ten
			Height Hundred
		Position	CH2 Hxxxxxx
			Horizontal Unit
			Horizontal Ten
			Horizontal Hundred
			Vertical Unit
			Vertical Ten
			Vertical Hundred
		Image Output	On/Off
		Window Reset	
		Menu Exit	

MAIN MENU	1ST LAYER	2ND LAYER	3RD LAYER
Window Setup	Channel 3 Select	Size	CH3 Wxxx Hxxx
			Width Unit
			Width Ten
			Width Hundred
			Height Unit
			Height Ten
			Height Hundred
		Position	CH3 Wxxx Hxxx
			Horizontal Unit
			Horizontal Ten
			Horizontal Hundred
			Vertical Unit
			Vertical Ten
			Vertical Hundred
		Image Output	On/Off
		Window Reset	
		Menu Exit	
	Channel 4 Select	Size	CH4 Wxxx Hxxx
			Width Unit
			Width Ten
			Width Hundred
			Height Unit
			Height Ten
			Height Hundred
		Position	CH4 Wxxx Hxxx
			Horizontal Unit
			Horizontal Ten
			Horizontal Hundred
			Vertical Unit
			Vertical Ten
			Vertical Hundred
		Image Output	On/Off
		Window Reset	
		Menu Exit	

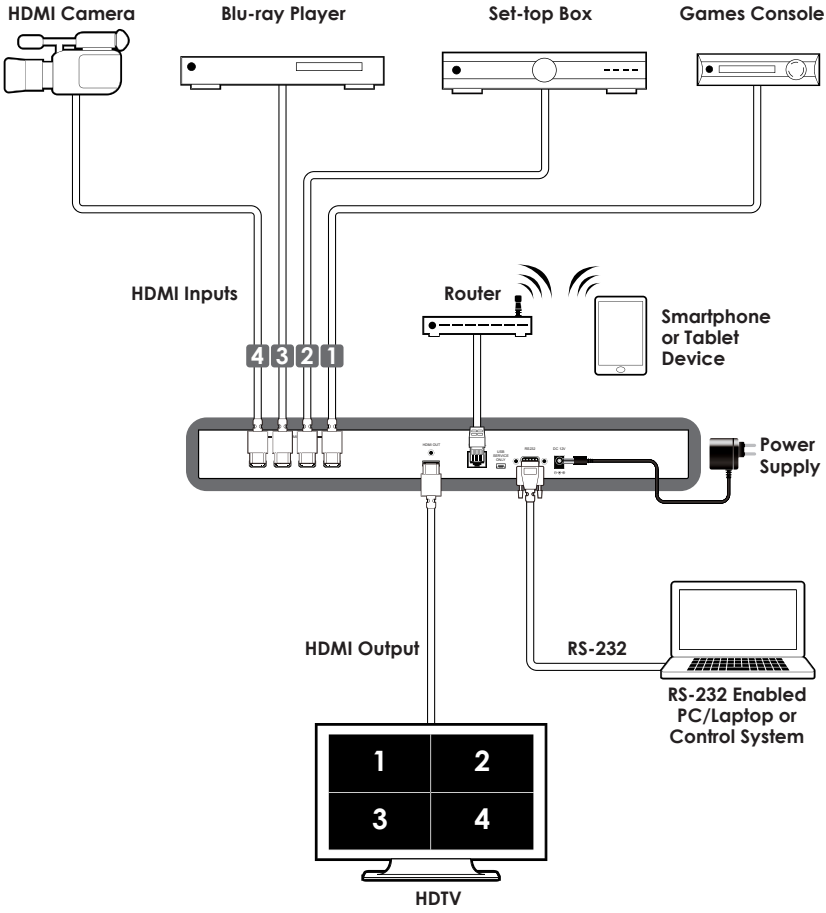
MAIN MENU	1ST LAYER	2ND LAYER	3RD LAYER
Window Setup	Favorite Store	FAV 1 Store	On/Off/OK
		FAV 2 Store	On/Off/OK
		FAV 3 Store	On/Off/OK
		FAV 4 Store	On/Off/OK
		Menu Exit	
	Favorite Recall	FAV 1 Recall	On/Off/OK
		FAV 2 Recall	On/Off/OK
		FAV 3 Recall	On/Off/OK
		FAV 4 Recall	On/Off/OK
		Menu Exit	
	Menu Exit		
Window Convert	Channel 1 Convert	Mirror	On/Off
		Fade In-Out	On/Off
		Rotation	R90/L90/180/Off
		Window Reset	
		Menu Exit	
	Channel 2 Convert	Mirror	On/Off
		Fade In-Out	On/Off
		Rotation	R90/L90/180/Off
		Window Reset	
		Menu Exit	
	Channel 3 Convert	Mirror	On/Off
		Fade In-Out	On/Off
		Rotation	R90/L90/180/Off
		Window Reset	
		Menu Exit	
	Channel 4 Convert	Mirror	On/Off
		Fade In-Out	On/Off
		Rotation	R90/L90/180/Off
		Window Reset	
		Menu Exit	

MAIN MENU	1ST LAYER	2ND LAYER	3RD LAYER
Chromakey Setup*	Minimum For R		000~255
	Maximum For R		000~255
	Minimum For G		000~255
	Maximum For G		000~255
	Minimum For B		000~255
	Maximum For B		000~255
	Switch		On/Off
	Menu Exit		
Ethernet Setup	IP Mode	Static/DHCP	
	Static Set	IP/Mask/Gate	
	Byte1 High	XXX	000~255
	Byte2	XXX	000~255
	Byte3	XXX	000~255
	Byte4 Low	XXX	000~255
	Re-Link	No/Yes	
	Exit		
	Static/DHCP IP	LINKED/NOT LINKED	
	IP	IP/Mask/Gate	
	Mask	XXX.XXX.XXX.XXX	
	Gate	XXX.XXX.XXX.XXX	
	Mac	XXX.XXX.XXX.XXX	
Sys Reset			
Information	FWersion		
Menu Exit			

Note:

1. *Chromakey Setup only works when CH 1and CH 2 are selected. CH 1 is the background and CH 2 is the top layer to be overlaid.*
2. *The Chromakey function is designed for overlapping twoideo images (such as news reports, weather forecasts or educationalideos). The background color of CH 2 is usually a single, solid, color which can be easily removed. The RGB setting is for the CH 2ideo where the minimum setting figures cannot be greater than the maximum figures and the maximum figures cannot be lower than the minimum setting figures.*
3. *When input 1 or 2 has no source connected a warning message will appear on the OSD.*

7. CONNECTION DIAGRAM



Screen Configurations:

8. SPECIFICATIONS

8.1 Technical Specifications

Video Bandwidth	225 MHz/6.75 Gbps
Input Ports	4×HDMI
Output Port	1×HDMI
Input Resolution Support	PC:GA~WUXGA HDTV: 480i~1080p
Output Resolution Support	1080p@60
HDMI Input Cable Length	Up to 15m@1080p/12-bit
HDMI Output Cable Length	Up to 15m@1080p/8-bit
Supported Sampling Rate	32~192 kHz
ESD Protection	Human body model: ±8kV (air-gap discharge) ±4kV (contact-gap discharge)
Power Supply	12 V/3 A DC (US/EU standards, CE/FCC/ UL certified)
Dimensions	436 mm (W)×247 mm (D)×44 mm (H)
Weight	2200 g
Chassis Material	Aluminum
Chassis Color	Black
Operating Temperature	0 ˚C~40 ˚C / 32 ˚F~104 ˚F
Storage Temperature	−20 ˚C ~ 60 ˚C / −4 ˚F ~ 140 ˚F
Relative Humidity	20 ~ 90 % RH (non-condensing)
Power Consumption	18 W

8.2 Supported Resolutions

RESOLUTIONS	INPUT	OUTPUT
640×480@60/72/75/85	✓	-
800×600@56/60/72/75/85	✓	-
1024×768@60/70/75/85	✓	-
1360×768@60	✓	-
1280×768@60/75	✓	-
1280×1024@60/75	✓	-
1620×1200@60	✓	-
1920×1200@60	✓	-
480i@60	✓	-
576i@50	✓	-
480p@60	✓	-
576p@50	✓	-
720p@50	✓	-
720p@60	✓	-
1080i@50	✓	-
1080i@60	✓	-
1080p@24	✓	-
1080p@50	✓	-
1080p@60	✓	✓

9. ACRONYMS

ACRONYM	COMPLETE TERM
CEC	Consumer Electronics Control
DVI	Digitalisual Interface
HDCP	High-bandwidth Digital Content Protection
HDMI	High Definition Multimedia Interface
PIP	Picture-in-Picture
POP	Picture out of picture
IR	Infrared

CYPRESS TECHNOLOGY CO., LTD
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